WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (SEPARATE SHEET)

International application No.
PCT/EP2004/010733

1. CITED DOCUMENTS

The following documents cited in the International Search Report are referred to:

D1: WO 03/004160 A (DIAGNOSWISS SA; ROSSIER, JOEL, S; MICHEL, PHILIPPE; REYMOND, FREDERIC) 16 January 2003 (2003-01-16)

D2: WU J ET AL: "Electrochemical time of flight flow sensor" SENSORS AND ACTUATORS A, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 97-98, 1 April 2002 (2002-04-01), pages 68-74, XP004361584 ISSN: 0924-4247

D3: US 2002/179445 A1 (ALAJOKI MARJA LIISA ET AL) 5 December 2002 (2002-12-05)

D4: US-A-5 992 820 (FARE ET AL) 30 November 1999 (1999-11-30)

2. REMARKS ON V. REASONED STATEMENT WITH REGARD TO NOVELTY, INVENTIVE STEP OR INDUSTRIAL APPLICABILITY

Articles 33(2), (3) PCT

The subject-matter of claims 1, 2, 5-25, 29-31, 35, 39, 40 is not new in the sense of Article 33(2) PCT.

The subject-matter of claims 3, 4, 26-28, 32-34, 36-38, 41 appears to lack an inventive step in the sense of Article 33(3) PCT.

2.1 Claims 1 and 30

Document D1 discloses (see e.g. Figs. 1A or 1B)

an electrochemical flow monitoring device, comprising

a microfluidic system comprising at least one covered (p. 4, l. 1-3) microchannel having an inlet and an outlet (see e.g. Figs. 1A or 1B);

means for applying a pressure difference between the inlet and the outlet of said microfluidic system such as to generate a flow of solution within said covered microchannel (see e.g. p. 13, l. 23-27);

wherein the microfluidic system has at least one electrode (5) for monitoring said flow of solution by measuring an electrochemical property of said solution (see e.g. p. 4, l. 24 - p. 5, l. 3).

Therefore, the subject-matter of claim 1 (and the corresponding method claim 30) is not new.

2.2 Claim 2

See p. 4, l. 24 - p. 5, l. 4 of D1: the 'electroactive species' is obviously a kind of 'reporter

molecule'.

2.3 Claims 3-7, 32-34
The different alternatives for inducing a pressure difference are obvious; the selections defined in claims 5-7 are explicitly mentioned in D1.

2.4 Claim 8
See, e.g., the paragraph starting with line 16 on p. 4 of D1.

2.5 Claims 9, 10
See e.g. claims 1 and 6 of D1.

2.6 Claims 11, 13
See e.g. claim 10 of D1.

2.7 Claim 12
See e.g. claims 16 and 17 or p. 12, second paragraph of D1.

2.8 Claim 14
See claim 12 of D1.

2.9 Claim 15
See the electrodes (5) of D1.

2.10 Claim 16
See p. 12, l. 12-14 and p. 21, l. 5-7 of D1.

2.11 Claims 17, 18
See D1.

2.12 Claim 19
See claim 17 of D1.

2.13 Claim 20
See e.g. p. 20, l. 28-29 of D1.

2.14 Claim 21

See e.g. claim 6 or p. 8, second paragraph - p. 9, first paragraph of D1.

2.15 Claims 22-24
See e.g. claims 23 and 24 of D1.

2.16 Claim 25, 35
See e.g. claim 38 of D1.

2.17 Claims 26, 27, 36, 37
These claims describe obvious possibilities to stop material flow through the microchannel(s) and cannot be regarded as involving an inventive step.

2.18 Claim 28, 38
See col. 1 and col. 2, section 'Summary of the Invention', of document D4. It is clear to the skilled person that the electrochemical bubble generation disclosed in D4 can be used in a microfluidic flow monitoring device according to D1.

2.19 Clam 29
Such affinity assays and incubation are also mentioned in D1 (p. 15, l. 20-24 and p. 18, second paragraph).

2.20 Claim 31
See Fig. 8 and the related passages of the description of D1.

2.21 Claims 39, 40
See Fig. 10 and the related passages of the description of D1.

2.22 Claim 41
Optical sensors are widely used in microfluidic detection systems, see e.g. D3. To use such sensors in an apparatus or method as disclosed in D1 does certainly not require any inventive skill.

3. REMARKS ON VII. CERTAIN DEFECTS IN THE INTERNATIONAL APPLICATION

3.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D4 is not mentioned in the description, nor are these documents identified therein.

3.2 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

4. REMARKS ON VIII. CERTAIN OBSERVATIONS ON THE INTERNATIONAL APPLICATION

Lack of clarity (Article 6 PCT)

Some claims relating to the flow monitoring device (but not to the use of this device, as it appears to be appropriate) define features concerning the use of the device: e.g., claim 21 defines that 'one electrode serves to electrochemically detect an analyte...'. This definition does obviously not relate to the device per se and does therefore make no contribution to the claims which claim 21 refers to.
Hence, the additional subject-matter of this claims is unclear.